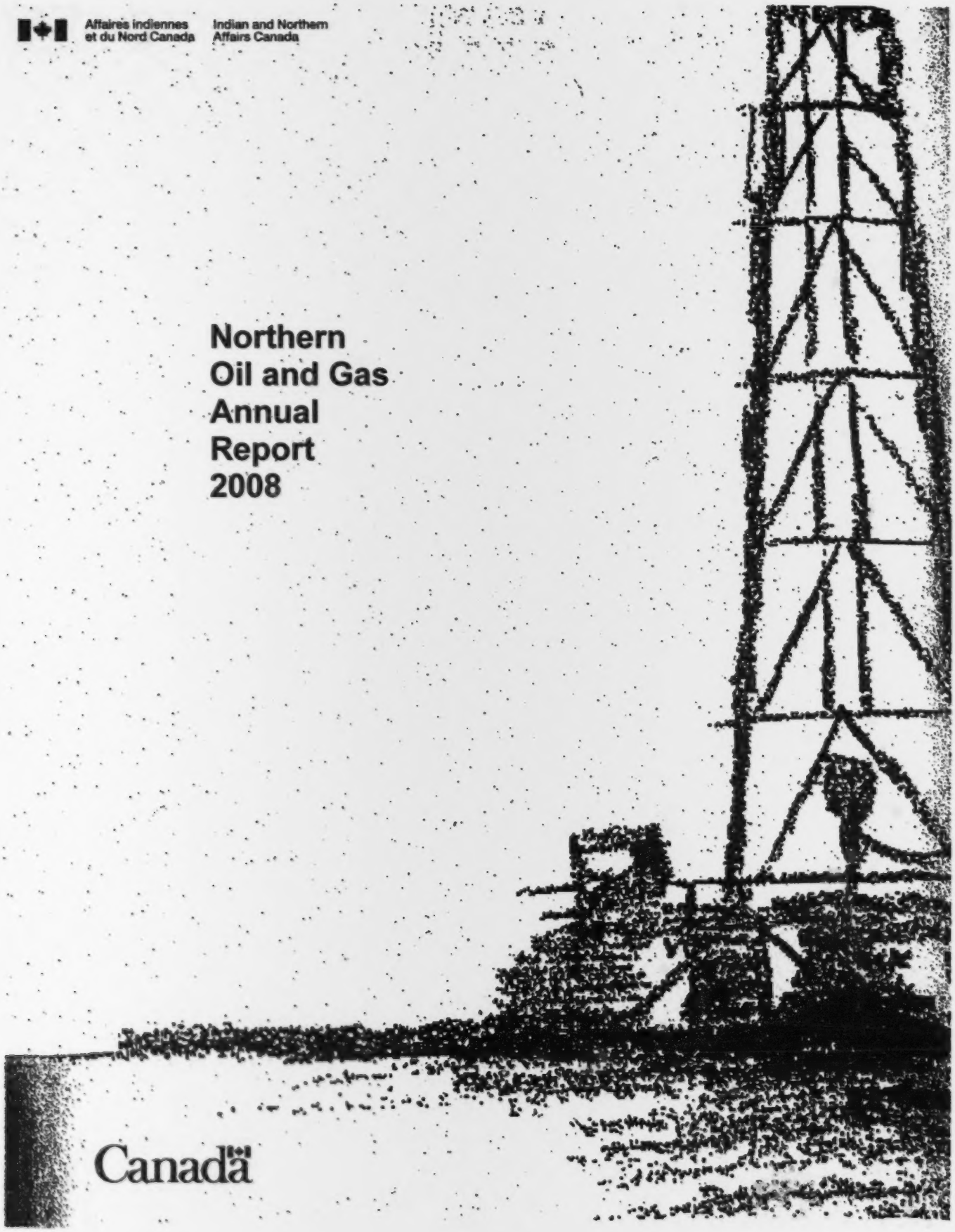
Affaires indiennes et du Nord Canada
Indian and Northern Affairs Canada

# Northern Oil and Gas Annual Report 2008



Canada

Affaires indiennes et du Nord Canada
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# Northern Oil and Gas Annual Report 2008

The management of oil and gas resources on Crown lands north of latitude 60°N in the Northwest Territories, Nunavut and the northern offshore is a federal responsibility carried out by the Northern Oil and Gas Branch of Indian and Northern Affairs Canada.

Petroleum resource management on Crown lands is exercised under federal legislation. The *Canada Petroleum Resources Act* and its regulations govern the granting and administration of Crown exploration and production rights and set the royalty regime. The *Canada Oil and Gas Operations Act* governs the regulation of petroleum operations and associated benefits requirements. Land, royalty and benefit matters are managed by the department on behalf of the Minister of Indian Affairs and Northern Development while the National Energy Board takes the lead role in approval of operations.

Information on the northern oil and gas regime may be found on the web at:
http://www.ainc-inac.gc.ca/nth/og/

Canada

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## Message from the Honourable Chuck Strahl, P.C., M.P. Minister of Indian Affairs and Northern Development and Federal Interlocutor for Métis and Non-Status Indians

In these times of economic uncertainty, it is more important than ever that Canada's government maintain a strong, pro-active stance to facilitate investment and create economic opportunities for all Canadians. It is vital that we continue to work with industry to seek out new sources of oil and gas and maintain secure energy sources for generations to come. Investments in oil and gas exploration and development in Canada's North provide ample opportunity to address these needs.

Over the past year, six new exploration licences have been issued in Canada's western Arctic for a total work expenditure commitment of $1.2 billion. This record amount of investment reflects industry's specific interest in exploring Canada's Arctic offshore in the Beaufort Sea.

These investments show that industry recognizes the incredible potential for Northern oil and gas development. Our government is committed to working with key partners to develop this potential and achieve our Northern Strategy objectives of promoting social and economic development in the North.

The Canadian Arctic continental shelf and slope, the Mackenzie Valley, Canada's Arctic Islands and eastern Arctic offshore have excellent potential for new oil and gas resources but remain scarcely explored. As such, our government has committed to funding research through the newly established "Geo-mapping for Energy and Minerals" program. This program will provide geo-science information to guide investment decisions and contribute to the discovery and development of new energy and mineral sources. Funding is also being provided to federal departments and agencies for activities related to the Mackenzie Gas Project – from environmental assessments and regulatory coordination to science and Aboriginal consultations. In the coming year we look forward to progress with these ongoing initiatives.

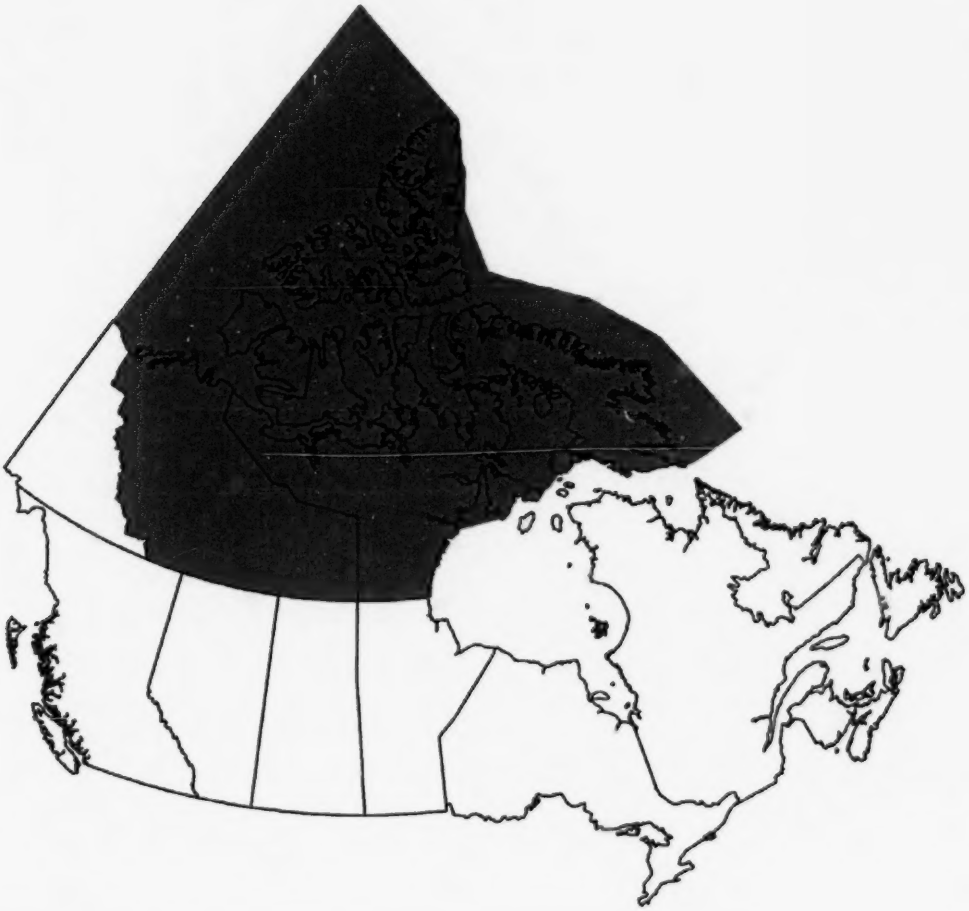
At the same time, our government remains committed to protecting our Northern environment. We have been making progress on plans for a new northern economic development agency and are moving ahead with improvements to regulatory regimes across the North. Initiatives like these, among many others, will ensure that Northern economic development is conducted in an environmentally responsible manner.

I invite you to consult this report for further details on the exploration and development of Canada's northern oil and gas resources over the past year.

In accordance with section 109 of the *Canadian Petroleum Resources Act*, I am pleased to table before Parliament this annual report on the administration of oil and gas lands in the Northwest Territories, Nunavut and the northern offshore for the year ending December 31, 2008.

May 15, 2009

## Canada's Frontier Lands



**Area under the responsibility of the Minister of Indian and Northern Affairs Canada**

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# NORTHERN OIL AND GAS

## Introduction

As conventional resources in the traditional producing areas of western Canada are drawn down, oil and gas in Canada's North becomes of increasingly important in relative terms. Some 35% of Canada's light crude oil and 33% of natural gas in conventional accumulations are now estimated to exist in the North. Together with unconventional natural gas and bitumen under development in the Provinces, northern oil and gas endows Canada with a balanced portfolio of hydrocarbon resources, ensuring economic and strategic choice in energy development.

Among northern petroleum basins the Beaufort-Mackenzie Basin is known to be particularly rich in both oil and gas with nearly 60 discoveries to date. Over $2.83 \times 10^{11}$ m$^3$ (10 trillion cubic feet) of discovered gas is currently awaiting development. New exploration concepts are being successfully applied which are increasing the discovered resource and exploration is now extending into deep water areas which hitherto have seen minimal activity. The move into deep water mirrors similar activity in deep water basins around the globe, relying heavily on both technological and conceptual advances in exploration.

Clearly the high price of oil and gas through much of 2008 (see Table 2) encouraged investment in northern exploration, particularly in the high cost offshore where potential prizes might be large but return on investment long delayed.

Canada's Arctic continental shelf and slope, the Mackenzie Valley of the Northwest Territories, much of the High Arctic of Nunavut and the eastern Arctic offshore in Baffin Bay remain lightly explored and offer opportunities to make new and potentially large discoveries of both gas and oil. These areas will be the object of new research by the Geological Survey of Canada under a new program 'Geo-mapping for Energy and Minerals'. This program, announced in August 2008, will provide geo-science information to help guide investment decisions leading to the discovery and development of new energy and mineral resources.

### *History*

Oil and gas exploration has a long history in the Canadian North, dating back to the Norman Wells oil discovery drilled in 1920. The late 1940s and 1950s saw increased exploration in the southern Northwest Territories followed by exploration throughout the North in the period 1960 to 1985, activity stimulated by the "oil price shock" of 1974 and concerns for domestic supply.

The mid 1980s saw expanded development of the major Norman Wells oil field in the central Mackenzie Valley and the construction of a pipeline from Norman Wells to northern Alberta. This ensured that northern oil resources would be a significant component of Canadian oil supply over recent decades.

Current interest in the North dates from the mid-1990s. Investment in oil and gas exploration began to flow north in 1995 with the issuance of new Exploration Licences (ELs) by the Crown in the southern Northwest Territories, closely followed by the central Mackenzie Valley. In 1999 and 2000, companies acquired exploration rights to lands

across much of the Mackenzie Delta and adjacent offshore. Subsequently, annual calls to industry to nominate new land blocks for exploration in the central Mackenzie Valley and Mackenzie Delta-Beaufort Sea has seen sustained uptake of new Exploration Licences. This in turn has been followed by investment in exploration activities such as seismic prospecting and exploratory drilling.

Over the past decade, resurgent investment in oil and gas exploration and development in Canada's North has been a clear expression of Canadian sovereignty over this vast area. Onshore, this investment has not been limited to federal lands within the purview of the *Canada Petroleum Resources Act*: recognizing the continuity of the underlying geology, much exploration activity has also occurred on private Aboriginal lands designated pursuant to northern comprehensive land claims.

Over recent years such activity on both Crown and private lands has provided sustained training, employment and business opportunities for local and regional economies.

### *2008 Highlights*

Oil and gas leasing was active in the central Mackenzie Valley and Beaufort-Mackenzie Basin, notably in the offshore portion. Six new Exploration Licences were issued in 2008 for a total work expenditure commitment of $1.2 billion.

Four new Exploration Licences were issued in the Beaufort Sea. BP Exploration won three of these licences. The winning bid of $1,180,100,000 for EL449, the most northerly licence, doubled the previous record work expenditure bid for exploration licences on northern frontier lands.

ConocoPhillips won the fourth offshore Exploration Licence with a bid of $2,543,896. A single licence on the Mackenzie Delta was awarded to MGM Energy, ConocoPhillips and Phillips Petroleum for $1,754,636.

The offshore exploration licences issued in 2008 lie adjacent to the high bid block won by Imperial Oil Resources and ExxonMobil in 2007. A large 3D seismic survey was conducted by Imperial this year, and activity is likely to be sustained as BP and ConocoPhillips ramp up exploration on their new licences.

The new licences consolidate a focus of exploration extending from the central Beaufort Sea Shelf to the shelf/slope break and into deep waters overlying the continental slope. The area lies mainly north of a chain of older discoveries at Havik (oil), Nerlerk (oil), Koakoak (oil), Kopanoar (oil), Nektoralik (gas) and Kenalooak (gas) drilled between 1976 and 1987.

One new Exploration Licence was issued following the Central Mackenzie Valley Call. This was issued to MGM Energy and Devon Canada for a work expenditure bid of $5,487,626. The licence adjoins EL440 in the close vicinity of the Sahtu community of Tulita.

In December 2008, the Joint Review Panel announced that its report on the environmental and socio-economic impact of the Mackenzie Gas Project (MGP) would not be released until December 2009. The MGP is the only major hydrocarbon development currently proposed for the North. It comprises development of three anchor fields in the Mackenzie Delta, and the construction of gathering and processing facilities, including a 1200 kilometre natural gas transmission pipeline to Alberta. Gas production would be from Imperial Oil's Taglu, ConocoPhillips' Parsons Lake and Shell Canada's Niglintgak gas fields with additional volumes expected to

enter the gathering system from more recent discoveries on the Mackenzie Delta.

From an operations viewpoint, 2008 was an improvement on the previous year. Overall, about $312 million was expended on northern exploration. This included six new exploratory wells with activity divided between the Mackenzie Delta and the central Mackenzie Valley. Although no wells were drilled on recently issued exploration licences in the Beaufort Sea, industry embarked on ambitious seismic exploration programs: 12,684 km of 2D seismic and 1638 $km^2$ of 3D seismic were acquired in the open water season in late summer and fall.

Only three fields produced oil or gas in the Northwest Territories in 2008: the Norman Wells oil field in the central Mackenzie Valley, the Ikhil gas field on the Mackenzie Delta and the Cameron Hills field southwest of Hay River in the southern Northwest Territories. Operators continued to suspend production from the remaining fields in the southern Northwest Territories. Consequently, total natural gas production in the Northwest Territories in 2008 fell to 203 x $10^6$ $m^3$ (7.17 billion cubic feet), a 33% drop from the previous year. About one half of this total represents associated gas at Norman Wells which is used for field operations.

Oil production was 7.5% lower in 2008 at 941.2 x $10^3$ $m^3$ (5.92 million barrels). This drop mainly reflected the expected continuing decline in production from Norman Wells.

## Oil and Gas Resources

A comprehensive review by Drummond Consulting of oil and gas resources in Northern Canada (2002) has recently been updated. The update, commissioned by Indian and Northern Affairs Canada at the end of 2008[1], includes revisions to previous estimates on the basis of new information and studies, and also reflects the declining resource base in the Western Canada Sedimentary Basin. (Note that non-Conventional resources such as the oil sands are not included.)

A current snapshot of oil and gas resources in Canada based on the new estimates puts 33% of Canada's remaining conventionally recoverable resources of natural gas (4.1 of 12.5 x $10^{12}$ $m^3$ (146.6 of 443 trillion cubic feet - tcf) and 35% of remaining recoverable light crude oil (1.8 of 5.2 x $10^9$ $m^3$ (11.6 of 33 billion barrels) in Canada's Northwest Territories, Nunavut, and Arctic offshore (in regions under the administration of the Minister of Indian and Northern Affairs). The proportion of remaining oil resource in the North compares with 25% in the 2002 estimate and reflects in part a higher expectation for oil potential in the Beaufort Sea.

Ultimate recoverable natural gas resources are divided between the western Arctic which, for the purposes of this report comprise the Northwest Territories, the Beaufort Sea including offshore Yukon, and waters of the western portion of the Arctic Archipelago (2.4 x $10^{12}$ $m^3$ - 84 tcf); and the eastern Arctic, comprising Nunavut and the eastern Arctic Islands and eastern Arctic offshore (1.6 x $10^{12}$ $m^3$ - 58 tcf). The western Arctic has an ultimate potential for crude oil estimated at 1.5 x $10^9$ $m^3$ (9.2 billion barrels) and the east at 0.42 x $10^9$ $m^3$ (2.7 billion barrels). It should be

[1] Drummond Consulting 2009, *Northern Canada Distribution of Ultimate Oil and Gas Resources* (Update), prepared for Indian and Northern Affairs Canada, 63 p. Available at http://drummondconsulting.com/NCAN09Report.pdf.

noted that these are mean estimates of potential derived by probabilistic methods using sparse data. Large uncertainties remain about resource potential in most of Canada's northern petroleum basins, especially for conceptual exploration plays which have yet to be proven by the drill.

The most accessible of these potential resources lie between the border with the provinces at 60 degrees North and the Beaufort Sea in a broad corridor running between the Rocky Mountains and the Canadian Shield and includes the northern fringe of the Western Canada Sedimentary Basin. The western Arctic includes much of the Northwest Territories and adjacent Arctic offshore, an area estimated to contain more than half of the recoverable petroleum in northern Canada, with the Beaufort-Mackenzie Basin the largest potential contributor.

In the Mackenzie Delta area, major gas fields at Taglu and Parsons Lake, together with the large Niglintgak field are proposed for development by the Mackenzie Gas Project (MGP). Combined resources in these fields are estimated by the proponents of the MGP at ($161 \times 10^9$ m$^3$ (5.7 tcf) (*Imperial Oil Ventures Limited, 2004; Application to the National Energy Board for Approval of the Mackenzie Valley Pipeline; Volume II Economics, Tolls and Tarifs; Gas Supply Study, section 4.1.*)

Onshore Mackenzie Delta, companies have announced several recent gas discoveries, potentially adding significant volumes to the existing inventory of gas resources in the basin and bringing the total number of discoveries in the basin to 57. For instance, the 2004 Umiak discovery is inferred to contain about $14 \times 10^9$ m$^3$ (500 billion cubic feet) of natural gas based on company filings (from resource estimates in *MGM Energy Corp Annual Information Form March 2008, p. 18*). However, the gas volumes quoted in Table 1 do not include recent discoveries for which there are no estimates publically available (at Ellice I-48, Olivier H-01, Langley K-30, Langley E-07, Kurk M-15 and Ellice J-27).

Other developments in the central Mackenzie Valley could access a Mackenzie Valley pipeline by means of a short lateral pipeline. The Nogha C-49/M-17 discovery in the Colville Hills is inferred to contain about $6.0 \times 10^9$m$^3$ (212 billion cubic feet) of natural gas based on company filings. Recent discoveries for which estimates of discovered resource are not currently available were made at Summit Creek B-44 and Stewart D-57 in the Mackenzie Plain; and Lac Maunoir C-34 and West Nogha K-14 in the Colville Hills.

Discovered gas volumes in the Arctic Islands of Nunavut and the Northwest Territories are comparable to those in the Beaufort Sea-Mackenzie Delta region. The most promising basin is the Sverdrup Basin where past discoveries include major gas fields at Drake Point and nearby Hecla with combined resources estimated at $257 \times 10^9$ m$^3$ (9.1 tcf). Significant oil discoveries and large unexplored oil potential is also present in this vast region of diverse and varied geology.

Large parts of the North remain lightly explored. Examples are the Arctic Continental Shelf and deep water areas of the Beaufort Shelf: both have seen minimal exploration and oil and gas potential remains largely conceptual. 2008 saw active exploration extending into the deep water areas of the central Beaufort Shelf.

Of potential future interest for development are non-Conventional hydrocarbons in the North. These include gas from coal, shale and accumulations of methane hydrates beneath the Mackenzie Delta. The shale gas potential of the northern extension of the Horn River Shale Basin into the southern Northwest Territories

has yet to be added to estimates of gas potential: building activity in British Columbia will help define the potential of comparable shale units north of 60 in due course.

Gas hydrate research in the Mackenzie Delta took another step forward in 2008 when a successful production test was conducted. However, the estimated volumes of recoverable resource remain poorly constrained, so these have not been included in quantified estimates with conventional resources.

**Table 1: Discovered Resources**

| Region | Crude Oil $10^6$ $m^3$ | (Million barrels) | Natural Gas $10^9$ $m^3$ | (Trillion cubic feet) |
|---|---|---|---|---|
| Northwest Territories and Arctic offshore | 250.5 | (1576.3) | 462.2 | (16.4) |
| Nunavut and Arctic offshore | 51.3 | (322.9) | 449.7 | (16.0) |
| **Total** | **301.8** | **(1899.2)** | **911.9** | **(32.4)** |

Notes:

- Adapted from Table 1 in *Drummond, K.J. 2009, Northern Canada Distribution of Ultimate Oil and Gas Resources.* p 60. Available at http://drummondconsulting.com/NCAN09Report.pdf. Compiled and integrated from several published sources which may underestimate or overestimate actual field resources. Volumes and distribution should be regarded as approximate and reflect the opinion of the author.
- Numbers may not add due to rounding.
- Arctic offshore includes areas offshore Yukon, Northwest Territories and Nunavut.

**Table 2: Oil and Gas Prices**

| | December 2007 | December 2008 | Average 2008 |
|---|---|---|---|
| Oil - C$ per $m^3$ (Average at Edmonton) | 566.23 | 561.99 | 648.13 |
| Gas - C$ per GJ (Average at AECO) | 6.28 | 6.01 | 7.73 |

Source: Natural Resources Canada

# OIL AND GAS MANAGEMENT

## Rights Issuance

The department provides industry with an annual opportunity to obtain exploration rights in the Northwest Territories, Nunavut and the northern offshore. The exploration rights are issued pursuant to the *Canada Petroleum Resources Act*.

A Call for Nominations precedes each Call for Bids. This allows industry to specify lands of interest for subsequent inclusion in a Call for Bids. Calls for Bids are open for the statutory minimum of 120 days.

Exploration rights are issued pursuant to an open, competitive bidding process. A single bid evaluation criterion - currently the expenditure planned on exploration of the land block ('work expenditure bid') - is used to determine the successful bidder who is issued an Exploration Licence of up to nine years, comprising two periods. The successful bidder is expected to spend the dollar value of the proposed work during the first period of the licence – typically of four to five years duration – and is required to drill one well during this first period to continue the licence into the second period.

In accordance with the provisions of comprehensive land claim settlement agreements, the Department seeks the views and support of Aboriginal communities and organizations prior to rights issuance on the terms and conditions of the issuance and related matters. The Department is also working towards establishing measures that would meet the needs and provide economic opportunities for those areas without a land claim settlement, primarily in the southern Northwest Territories.

In January 2008, two Calls for Nominations closed with five parcels nominated in the Beaufort Sea and Mackenzie Delta and one in the central Mackenzie Valley. Although a Call for Nominations was issued for the Arctic Islands of Nunavut, no postings were received.

All nominated parcels were included in subsequent Calls for Bids. The Beaufort Sea and Mackenzie Delta Call for Bids, which closed on June 2, 2008, resulted in the issuance of five Exploration Licences (EL449 to EL453) covering 849,194 hectares and totalling $1,200,598,532 of work expenditures. The Central Mackenzie Valley Call for Bids, which also closed on June 2, 2008, resulted in the issuance of one new Exploration Licences (EL454) covering 82,100 hectares and totalling $5,487,626 of work expenditures.

In December 2008, Calls for Nominations were issued for the Beaufort Sea and Mackenzie Delta, and for the Central Mackenzie Valley, both closing January 14, 2009, and for the Arctic Islands of Nunavut, closing January 28, 2009.

### Interests Issued in 2008

In 2008, six new Exploration Licences were issued as a result of successful Calls for Bids. The one issued in the central Mackenzie Valley was EL454 to MGM Energy Corp and Devon ARL Corporation. The five issued in the Beaufort Sea/Mackenzie Delta were EL449 to BP Exploration Company Limited; EL450 to MGM Energy Corp, ConocoPhillips Canada

Resources Corp, Phillips Petroleum Canada Ltd., and Phillips Petroleum Resources Ltd; EL451 to BP Exploration Company Limited; EL452 to ConocoPhillips Canada Resources Corp., and EL453 to BP Exploration Company Limited.

Six Exploration Licences terminated in 2008, three by expiry and two by surrender.

Eight Significant Discovery Licences (SDL) were issued: SDL137 to BP Canada Energy Company and Chevron Canada Limited; SDL138 to SDL140 to Husky Oil Operations Limited, International Frontier Resources Corporation, Pacific Rodera Energy Inc, and TAQA North Ltd; SDL141 to SDL143 to Apache Canada Ltd. and MGM Energy Corp; SDL144 to Devon ARL Corporation and Petro-Canada.

During 2008 one Production Licence (PL25) was issued to Chevron Canada Limited and BP Canada Energy Company, interest holders of EL394, to which extended part of the commercial discovery declared by the National Energy Board in November 2004 over Shell Canada's Niglintgak gas discovery.

## Significant and Commercial Discovery Declarations and Development Plan Submissions

The National Energy Board made four significant discovery declarations in 2008 pursuant to the *Canada Petroleum Resources Act* Part III, s. 28(1) and the *National Energy Board Act* Part II.1, s. 28.2(4): to Chevron Canada Limited in respect of the Chevron *et al.* Ellice I-48 well on EL427-A in the Mackenzie Delta; to MGM Energy Corp. for the MGM *et al.* Langley E-07 well on EL394, also in the Mackenzie Delta; to MGM Energy Corp. for the MGM *et al.* Nogha C-49 well in relation to lands held under EL426 and EL430 in the Colville Hills; and to Husky Oil Operations Limited for the Husky *et al.* Summit Creek B-44 well on EL397 in the central Mackenzie Valley.

The Board also received two applications for significant discovery which were under review at year end; for the PC Anderson Kurk M-15 well on EL419 in the Mackenzie Delta and for the MGM *et al.* Lac Maunoir C-34 well on EL399 in the Colville Hills.

No application for commercial discovery declaration or development plan approval was received during 2008.

## Table 3: Land Disposition as of December 31, 2008

| Region | Exploration Licence | Production Licence | Significant Discovery Licence | Former Rights * | Total |
|---|---|---|---|---|---|
| **In hectares** | | | | | |
| Arctic Islands | 0 | 1,224 | 332,882 | 0 | **334,106** |
| Eastern Arctic Offshore | 0 | 0 | 11,184 | 862,500 | **873,684** [1] |
| Hudson Bay [3] | 0 | 0 | 0 | 126,376 | **126,376** [1] |
| Beaufort Sea | 2,003,597 | 0 | 196,576 | 0 | **2,200,173** |
| Mackenzie Delta | 246,015 | 2,506 | 109,937 | 0 | **358,458** |
| Central Mackenzie Valley | 1,716,953 | 0 | 51,693 | 2,981 | **1,771,627** [2] |
| Southern Northwest Territories | 0 | 32,842 | 65,125 | 25,635 | **123,602** [2] |
| **Total** | **3,966,565** | **36,572** | **767,397** | **1,017,492** | **5,788,026** |
| **By interest Type (number of licences)** | | | | | |
| Arctic Islands | 0 | 1 | 20 | 0 | **21** |
| Eastern Arctic Offshore | 0 | 0 | 1 | 30 | **31** [1] |
| Hudson Bay [3] | 0 | 0 | 0 | 8 | **8** [1] |
| Beaufort Sea | 12 | 0 | 39 | 0 | **51** |
| Mackenzie Delta | 1 | 2 | 36 | 0 | **39** |
| Central Mackenzie Valley | 22 | 0 | 10 | 3 | **35** [2] |
| Southern Northwest Territories | 0 | 21 | 31 | 14 | **66** [2] |
| **Total** | **35** | **24** | **137** | **55** | **251** |

* Permits and/or Leases issued under former legislative regimes

[1] Includes lands held under permits pursuant to s. 112(2) of the *Canada Petroleum Resources Act*

[2] Includes lands held under leases pursuant to s. 112(2) of the *Canada Petroleum Resources Act*

[3] Permits under the administration of the Minister of Indian Affairs and Northern Development only

# Administration of Interests

## Exploration Licences

There were 40 Exploration Licences active at the end of 2008. In order to obtain an Exploration Licence, the bidder must post a bid deposit for the specific parcel in the amount of $10,000. The successful bidder is required to post 25% of the work expenditure bid as security for the performance of work within 10 working days. Failure to post the work deposit as security for the performance of work will result in the cancellation of the bid and forfeiture of the bid deposit and disqualification of the bid. In that event, the Minister may, if he sees fit, award the exploration licence to the second highest bidder without making another Call for Bids.

Both the work deposit required for Period 1 and the rentals in Period 2 are refundable upon completion and approval of the work undertaken on the licence. Should expenditures in Period 1 fail to meet the amount of the work expenditure bid, the residue of the deposit is forfeit. Similarly, rentals are required in full at the beginning of each year in Period 2 and any rental balance remaining at the end of Period 2 is forfeit.

Administration of the deposits includes the approval of allowable expenditures submitted as exploratory work is completed. Deposit administration is ongoing throughout the year as new deposits are received for the rentals due in Period 2 and adjustments are made to those already in the system.

## Table 4: Exploration Licences

| Licence | Area (ha) | Representative[1] | Issue Date | Well to be Drilled by | | Expiry Date | Work Bid Amount (in $) |
|---|---|---|---|---|---|---|---|
| **Beaufort Sea/Mackenzie Delta** | | | | | | | |
| EL317[2] | 175,810 | Talisman Energy Inc. | 05-Oct-1986 | N/A | | | N/A |
| EL329[2] | 349,981 | BP Canada Energy Resources | 05-Sep-1987 | N/A | | | N/A |
| EL394 | 73,155 | Chevron Canada Limited | 18-Sep-1999 | 17-Sep-2004 | ✓ | 17-Sep-2008 | 42,375,000 |
| EL419[3] | 46,507 | Petro-Canada | 18-Apr-2002 | 17-Sep-2004 | ✓ | 17-Sep-2008 | 105,293,760 |
| EL420[3] | 338,469 | Devon ARL Corporation | 15-Aug-2002 | 14-Aug-2005 | ✓ | 14-Aug-2009 | 224,069,656 |
| EL427-A[3] | 73,608 | Chevron Canada Limited | 20-Sep-2004 | 14-Aug-2005 | ✓ | 14-Aug-2009 | |
| EL427-B[3] | 18,912 | Chevron Canada Limited | 20-Sep-2004 | 13-May-2007 | ✓ | 13-May-2011 | 151,758,288 |
| EL427-C[3] | 56,057 | Chevron Canada Limited | 20-Sep-2004 | 07-Jun-2009 | ✓ | 07-Jun-2013 | |
| EL434 | 56,619 | MGM Energy Corp. | 03-May-2006 | 02-May-2011 | | 02-May-2015 | 40,169,000 |
| EL435 | 99,942 | Shell Canada Limited | 03-May-2006 | 02-May-2011 | | 02-May-2015 | 11,552,332 |
| EL446 | 205,321 | Imperial Oil Resources Ventures Limited | 01-Oct-2007 | 30-Sep-2012 | | 30-Sep-2016 | 585,000,000 |
| EL447 | 103,711 | ConocoPhillips Canada Resources Corp. | 01-Sep-2007 | 31-Aug-2012 | | 31-Aug-2016 | 12,084,131 |
| EL448 | 108,185 | Chevron Canada Limited | 31-Dec-2007 | 30-Dec-2012 | | 30-Dec-2016 | 1,010,100 |
| EL449 | 202,380 | BP Exploration Company Ltd. | 01-Dec-2008 | 30-Nov-2013 | | 30-Nov-2017 | 1,180,100,000 |
| EL450 | 41,323 | MGM Energy Corp. | 03-Jun-2008 | 02-Jun-2013 | | 02-Jun-2017 | 1,754,636 |
| EL451 | 205,359 | BP Exploration Company Ltd. | 01-Dec-2008 | 30-Nov-2013 | | 30-Nov-2017 | 15,100,000 |
| EL452 | 196,497 | ConocoPhillips Canada Resources Corp. | 01-Dec-2008 | 30-Nov-2013 | | 30-Nov-2017 | 2,543,896 |
| EL453 | 203,635 | BP Exploration Company Ltd. | 01-Dec-2008 | 30-Nov-2013 | | 30-Nov-2017 | 1,100,000 |

Work Bids rounded to the nearest $

[1] These representatives are current as of December 31, 2008

[2] Under work prohibition orders as per s. 12(1)(a) of the *Canada Petroleum Resources Act*

[3] Consolidation as per s. 25(3) of the *Canada Petroleum Resources Act*

Note that on consolidated licences, one well may not be sufficient to hold all lands in the licence, depending on the terms and conditions.

✓ Well requirement met as of year end. The drilling of one exploratory or delineation well prior to the end of Period 1 of the term is a condition precedent to obtaining tenure to Period 2.

## Table 4: Exploration Licences (continued)

| Licence | Area (ha) | Representative [1] | Issue Date | Well to be Drilled by | | Expiry Date | Work Bid Amount (in $) |
|---|---|---|---|---|---|---|---|
| **Central Mackenzie Valley - Mainland** | | | | | | | |
| EL397 | 134,964 | Husky Oil Operations Limited | 01-Aug-2000 | 31-Jul-2004 | ✓ | 31-Jul-2008 | 16,580,000 |
| EL399 | 120,496 | MGM Energy Corp. | 01-Aug-2000 | 31-Jul-2004 | ✓ | 31-Jul-2008 | 8,400,000 |
| EL413 | 80,464 | Kodiak Energy Inc. | 18-Sep-2001 | 17-Sep-2005 | ✓ | 17-Sep-2009 | 2,000,000 |
| EL414 | 84,880 | MGM Energy Corp. | 18-Sep-2001 | 17-Sep-2005 | ✓ | 17-Sep-2009 | 10,750,000 |
| EL423 | 90,632 | Husky Oil Operations Limited | 08-Jun-2004 | 07-Jun-2008 | ✓ | 07-Jun-2012 | 24,800,000 |
| EL424 | 80,608 | MGM Energy Corp. | 08-Jun-2004 | 07-Jun-2008 | | 07-Jun-2012 | 8,100,000 |
| EL425 | 27,230 | Petro-Canada | 08-Jun-2004 | 07-Jun-2010 | | 07-Jun-2013 | 22,000,000 |
| EL428 | 81,008 | Apache Canada Ltd. | 18-May-2005 | 17-May-2009 | | 17-May-2013 | 3,200,000 |
| EL429 | 82,880 | BG International Limited | 18-May-2005 | 17-May-2009 | | 17-May-2013 | 12,500,000 |
| EL430 | 51,637 | MGM Energy Corp. | 18-May-2005 | 17-May-2009 | | 17-May-2013 | 3,510,000 |
| EL431 | 78,516 | Petro-Canada | 18-May-2005 | 17-May-2011 | | 17-May-2014 | 2,787,792 |
| EL432 | 64,048 | BG International Limited | 18-May-2005 | 17-May-2009 | | 17-May-2013 | 4,000,000 |
| EL433 | 88,004 | Petro-Canada | 18-May-2005 | 17-May-2009 | ✓ | 17-May-2013 | 32,128,045 |
| EL436 | 84,353 | Talisman Energy Inc. | 10-May-2006 | 09-May-2010 | | 09-May-2014 | 12,150,000 |
| EL437 | 85,993 | Talisman Energy Inc. | 10-May-2006 | 09-May-2010 | | 09-May-2014 | 32,775,000 |
| EL438 | 87,183 | Talisman Energy Inc. | 10-May-2006 | 09-May-2010 | | 09-May-2014 | 3,850,000 |
| EL439 | 82,820 | Talisman Energy Inc. | 10-May-2006 | 09-May-2010 | | 09-May-2014 | 5,125,000 |
| EL440 | 87,872 | MGM Energy Corp. | 10-May-2006 | 09-May-2010 | | 09-May-2014 | 6,300,000 |
| EL441 | 88,452 | Husky Oil Operations Limited | 10-May-2006 | 09-May-2010 | | 09-May-2014 | 10,500,000 |
| EL442 | 63,312 | MGM Energy Corp. | 10-May-2007 | 09-May-2011 | | 09-May-2015 | 8,260,000 |
| EL443 | 91,116 | Husky Oil Operations Limited | 10-May-2007 | 09-May-2011 | | 09-May-2015 | 4,888,888 |
| EL444 | 74,604 | BG International Limited | 10-May-2007 | 09-May-2011 | | 09-May-2015 | 1,100,000 |
| EL445 | 81,292 | BG International Limited | 10-May-2007 | 09-May-2011 | | 09-May-2015 | 1,100,000 |
| EL454 | 82,100 | MGM Energy Corp. | 01-Dec-2008 | 30-Nov-2012 | | 30-Nov-2016 | 5,487,626 |

Work Bids rounded to the nearest $

[1] These representatives are current as of December 31, 2008

[2] Under work prohibition orders as per s. 12(1)(a) of the *Canada Petroleum Resources Act*

[3] Consolidation as per s. 25(3) of the *Canada Petroleum Resources Act*

Note that on consolidated licences, one well may not be sufficient to hold all lands in the licence, depending on the terms and conditions.

✓ Well requirement met as of year end. The drilling of one exploratory or delineation well prior to the end of Period 1 of the term is a condition precedent to obtaining tenure to Period 2.

## Security Deposits Being Administered

Security deposits for Period 1 and 2 are held on a refundable basis.

During Period 1, 25% of the work expenditure bid is held as security to be refunded at $1 for each $4 of eligible expenditure. Security deposits on hand as of December 31, 2008 totalled $530,513,262.

During Period 2, the security deposit comprises rentals payable annually at the following rate per hectare: 1st year @ $3.00; 2nd year @ $5.50; 3rd and 4th years @ $8.00. Rentals are refunded at $1 for every $1 of eligible expenditure. Security deposits on hand as of December 31, 2008 totalled $5,715,958.

**Table 5: Revenues from Administration of Interests ($)**

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| Non refundable rentals (Former Leases) [1] | 978 | 61,111 | 66,500 | 62,500 | 62,749 | 54,817 |
| Issuance and Registration Fees | 5,471 | 8,600 | 13,500 | 19,891 | 26,998 | 30,762 |
| Forfeitures [2] | 954,812 | 16,933,374 | 26,228,000 | 0 | 1,290,404 | 22,174,929 |
| **Total** | **961,261** | **17,003,085** | **26,308,000** | **82,391** | **1,380,151** | **22,260,508** |

[1] These Former Leases were subject to the *Canada Oil and Gas Land Regulations*, the said leases are continued in force pursuant to subsection 114 of the *Canada Petroleum Resources Act*.

[2] Forfeited monies are revenues received within the calendar year for either Period 1 or 2 of an exploration licence.

## Benefits

Section 21 of the *Canada Petroleum Resources Act* requires that a Benefits Plan be submitted to the Minister before any exploration or development activity can take place on frontier lands, i.e., the Northwest Territories, Nunavut and the offshore non-Accord areas.

In a Benefits Plan, a company proposing an exploration or development describes the principles, strategies and procedures that it will commit to implementing to ensure that full and fair opportunity is provided to qualified Canadians and Canadian businesses competing for jobs and business contracts. The department requires that a company monitor and submit regular reports on the implementation of the commitments in a Benefits Plan. As a long-standing practice, the department has encouraged companies to favour on a competitive basis local and regional qualified Aboriginal and northern Canadians and businesses.

This year exploration in the central Mackenzie Valley provided training, employment and business benefits for local northern communities. In the southern Mackenzie Valley, ongoing oil and gas production in the Cameron Hills area and well maintenance operations in the Fort Liard area sustained local and regional economic benefits. In the Mackenzie Delta and in the northern offshore, continuing well and seismic operations generated a succession of benefits, with the outlook for continued activity suggesting future opportunities. Gas hydrate research on

the Mackenzie Delta also continued to contribute to local training, jobs and business opportunities.

The Northern Oil and Gas Branch works closely with the Petroleum Development Division in the department's regional office in Yellowknife, Northwest Territories. This Division administers the Benefits Plans for exploration activities in the region.

## Environmental Considerations

As part of the annual process leading to Calls for Nominations, northern Aboriginal groups are notified of the Minister's intention to open lands and are provided the opportunity to identify areas of environmental sensitivity and those of special interest for cultural and spiritual reasons. This dialogue provides a forum for concerns with respect to oil and gas activities initiated by issuance of oil and gas exploration licences.

INAC solicits input from expert groups in the territorial governments and other federal departments on the proposed Calls. This input is carefully considered in finalizing Call documents. INAC also works with organizations responsible for planning and managing protected areas such as Marine Protected Areas and Migratory Bird Sanctuaries to ensure that the various land management initiatives are considered from an integrated perspective. Northern land use plans such as the Gwich'in Land Use Plan and the draft Sahtu Land Use Plan are also used in developing the Call area.

Environmental considerations and the concerns of northern Aboriginal groups play an important role in designing the Minister's petroleum rights issuance initiatives and serve to alert industry to potential concerns in areas of their newly acquired rights. These may need to be addressed when companies subsequently apply for land use permits, water licences, and work authorizations to conduct operations such as seismic or drilling on their exploration licence. The area opened for nominations, the content of the Call for Nominations package, and the terms and conditions associated with both the Calls for Nominations and Bids reflect consideration of advice received through this engagement process.

### Environmental Sensitivities in the Southern Beaufort Sea and Mackenzie Delta

Over the last two years, INAC has undertaken a pilot project to develop maps of relative environmental sensitivities in the southern Beaufort Sea and Mackenzie Delta. These maps are generated from a geographic information system using information and sensitivity ranking from expert sources. The objective of the project is to improve rights issuance planning and decision making, to foster information exchange with northern Aboriginal groups and other stakeholders, and to alert companies considering acquiring exploration licences of potential sensitivities which may require special efforts to mitigate effects. Mapped environmental themes currently include polar bears, beluga whales, migratory birds and ringed seals. Socio-economic sensitivity is developed from traditional hunting information. These maps will be further refined and developed in consultation with resource management partners.

## Environmental Studies Research Funds (ESRF)

Under the *Canada Petroleum Resources Act*, the Environmental Studies Research Fund (ESRF) finances environmental and social studies related to the exploration, development and production of oil and gas resources on frontier lands. Responding to the resurgence of oil and gas activity in the North, the ESRF Management Board funded their northern study program for 2008 through levies agreed to by industry representatives and subsequently approved by the Minister. The budget approved for the North by the ESRF Management Board for 2008 amounted to $576,159.

A final report on northern research was published: ESRF Report #163 *Biophysical Research Requirements for the Beaufort Sea Hydrocarbon Development*, prepared by KAVIKAXYS Inc., Inuvik, Northwest Territories and Calgary, Alberta, in association with FMA Heritage Resources Consultants Inc. Calgary, Alberta. A second study was completed and is in the process of being published as ESRF Report #164: *Development of Histopathology Tools to Assess Instantaneous Pressure Change-Induced Effects in Rainbow Trout (Onchorhychus mykiss) Early Life Stages*, prepared by Godard, D.R., Peters, L., Evans, R., Wautier, K., Cott, P.A., Hanna, B., and Palace, V.

The following research projects were underway in 2008: *Northern cumulative effects study on valued components and thresholds; An assessment of impacts and recovery of seismic lines* (first year of a three year study); *Assessment of drilling waste disposal options in the Inuvialuit Settlement Region; Bosworth Creek monitoring study;* and *Considerations in developing oil and gas industry best practices in the North.*

For further information see the ESRF web site at www.esrfunds.org.

# EXPLORATION ACTIVITY IN THE NORTH

## Northern Operations

### *Summary*

Metres drilled in the Northwest Territories totalled 12,074 m in 2008 (including both exploratory and development wells). Six new exploratory wells were commenced; three in the Mackenzie Delta and three in the central Mackenzie Valley (Sahtu).

There were 14 geophysical field operations including seismic, gravity and aeromagnetic surveys. Five of these were in the central Mackenzie Valley, two in the Mackenzie Delta, three in the Beaufort Sea and four in the eastern Arctic offshore. A total of 12,684 km of 2D and 1638 km² of 3D seismic was acquired plus 11,189.8 km of gravity and 85,252.4 km of aeromagnetic data.

Total exploration expenditures in the North in 2008 are estimated at $312 million. This total comprises $113 spent on new drilling, $21 million on well re-entries and $178 million on geophysical surveys.

### *Southern Northwest Territories*

There was no exploration or development drilling in this region. At Cameron Hills the H-03, J-04 and K-74 wells were re-entered for well operations. Elsewhere re-entries were conducted on four wells in the Fort Liard area but no new holes were drilled.

### *Mackenzie Delta*

In the Mackenzie Delta, MGM Energy Inc. drilled the Atik P-19 well (commenced in December 2007) to total depth on EL419. The company followed up with two additional wells, Aput C-43 on EL427-B[2], and Langley E-07 on EL394. In April, following a testing program, the company announced a gas discovery at Langley. Late in the year, MGM commenced their 2008-09 drilling program in the Delta with the Ellice J-27 well on EL427-A[2]. This is the first of a three well program planned for winter 2008-2009.

Two seismic programs were conducted by MGM on the Mackenzie Delta; a 2D program at Ogruknang focused on Inuvialuit lands in the Inuvik Concession, and a 3D program on EL427. The latter extended over ice into shallow coastal waters.

Also on the Mackenzie Delta four test wells were re-entered at Mallik (SDL060) as part of a scientific and engineering research program on gas hydrates led by the Geological Survey of Canada. Sustained production of gas from the hydrate zone over six days proved the concept of gas hydrate production through *in situ* depressurization. (*Energy from Gas Hydrates: Assessing the Opportunities and Challenges for Canada*, Council of Canadian Academies 2008)

### *Beaufort Sea*

No wells were drilled in the Beaufort Sea in 2008 but seismic operations commenced to determine drilling locations on exploration licences issued in 2007. Imperial Oil Resources Ventures Ltd. undertook a 3D marine seismic and gravity survey at Ajurak focused on EL446. In two separate programs, GX Technologies Canada Ltd., a geophysical

[2] Consolidation as per s. 25(3) of the Canada Petroleum Resources Act

acquisition company, acquired aeromagnetic and 2D seismic data.

### *Central Mackenzie Valley*

PetroCanada drilled the Kwijika M-59 well on EL433. This well, a remote wildcat drilled 80 km southeast of Deline was declared dry and abandoned by the company.

Husky and partners drilled two wells on EL423, west of the Mackenzie River, 100 km south of Tulita. Both Dahadinni B-20 and Keele River L-52 were reported dry and abandoned.

In geophysical operations, Kodiak Petroleum ran a 2D seismic and a gravity program on EL413 in the Grandview area (straddling the Sahtu and Gwich'in settlement areas) and MGM ran a 2D seismic and a gravity survey at Kelly Lake (ELs 414 and 442). In addition, Explor Geophysical Ltd. completed a non-exclusive 2D seismic program in the Colville Lake area.

### *Arctic Islands of Nunavut*

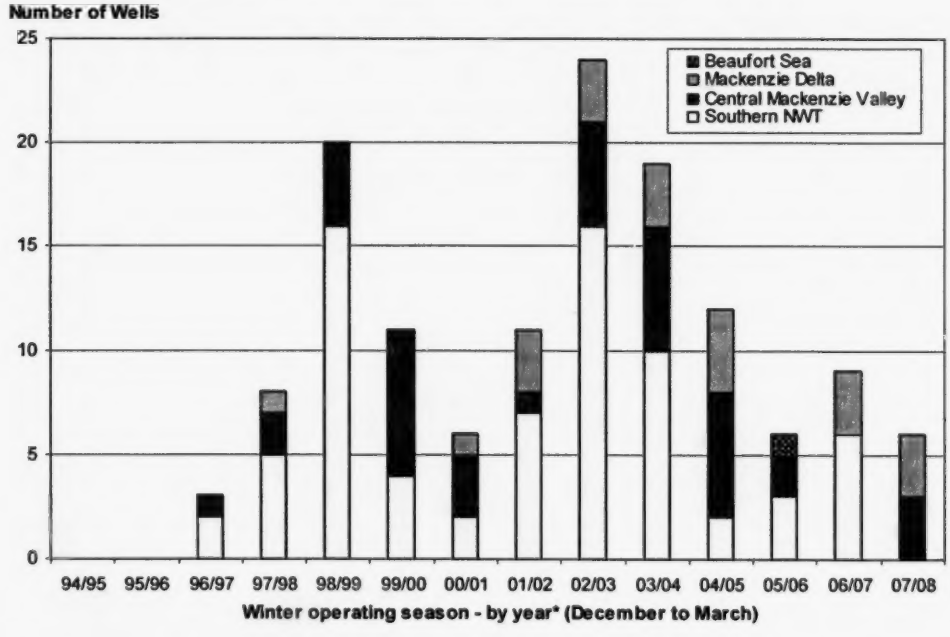
There were no industry exploration activities in this region in 2008.

### *Eastern Arctic Offshore*

Four geophysical programs were undertaken. A 2D seismic program was acquired by Husky and Encana extending west into Canadian waters from active exploration interests offshore Greenland. Geophysical Service Inc. and TGS-Nopec Geophysical Company ASA both acquired non-exclusive 2D seismic in the Baffin Bay-Davies Strait area.

*[Note: The Frontier Information Office of the National Energy Board is the primary source of operational data cited above.]*

**Figure 1: Wells Drilled**




*Excludes Norman Wells development drilling

## Table 6: Drilling Statistics 2008

| Well Name | Lat (NAD 27) | Long (NAD 27) | Class[1] | Total Depth (m) | Metres drilled in 2008 | Begun | Rig Released | Well Status[2] | Licence[3] |
|---|---|---|---|---|---|---|---|---|---|
| **Southern Territories** | | | | | | | | | |
| ***Re-Entries of previously drilled wells*** | | | | | | | | | |
| Paramount *et al* LIARD 2M-25[4] | 60.414 | -123.587 | DEV | 4324.0 | - | 23-Mar-08 | 31-Mar-08 | S | PL09 |
| Paramount *et al* LIARD M-25 | 60.414 | -123.587 | DEL | 3770.0 | - | 21-Mar-08 | 25-Mar-08 | S | PL09 |
| Paramount *et al* FORT LIARD O-35 | 60.080 | -123.356 | DEL | 2121.0 | - | 15-Feb-08 | 23-Feb-08 | S | PL07 |
| Paramount Anadarko BOVIE F-66 | 60.256 | -122.959 | EX | 3368.0 | - | 05-Mar-08 | 27-Mar-08 | S | SDL122 |
| Paramount *et al* CAMERON H-03 | 60.040 | -117.502 | DEV | 1662.0 | - | 14-Jan-08 | 19-Jan-08 | PR | PL17 |
| Paramount *et al* CAMERON J-04 | 60.059 | -117.513 | DEV | 1448.7 | - | 19-Jan-08 | 29-Jan-08 | S | PL13 |
| Paramount *et al* CAMERON K-74 | 60.061 | -117.491 | DEV | 1465.0 | - | 30-Jan-08 | 05-Feb-08 | PR | PL13 |
| **Mackenzie Valley** | | | | | | | | | |
| ***New Wells*** | | | | | | | | | |
| Petro-Canada BLACKWATER KWIJIKA M-59 | 64.646 | -122.682 | EX | 1640.0 | 1640.0 | 11-Feb-08 | 04-Mar-08 | A | EL433 |
| Husky *et al* DAHADINNI B-20 | 63.984 | -125.047 | EX | 2420.0 | 2420.0 | 16-Feb-08 | 31-Mar-08 | A | EL423 |
| Husky *et al* KEELE RIVER L-52 | 64.025 | -124.935 | EX | 895.0 | 895.0 | 06-Mar-08 | 21-Mar-08 | A | EL423 |
| Imperial NORMAN WELLS M-50-1X[4] | 65.257 | -126.866 | DEV | 1309.0 | 1309.0 | 04-Jul-08 | 28-Aug-08 | S | PA |
| Imperial NORMAN WELLS N-13X | 65.276 | -126.941 | DEV | 635.0 | 635.0 | 15-Sep-08 | 28-Sep-08 | PR | PA |
| **Mackenzie Delta** | | | | | | | | | |
| ***New Wells*** | | | | | | | | | |
| MGM *et al* APUT C-43 | 69.034 | -135.697 | EX | 2101.0 | 2101.0 | 06-Feb-08 | 09-Mar-08 | S | EL427-B |
| MGM *et al* ATIK P-19[5] | 68.982 | -135.545 | EX | 1803.0 | 1214.0 | 23-Dec-07 | 26-Jan-08 | A | EL427-B |
| MGM *et al* LANGLEY E-07 | 69.273 | -135.534 | EX | 1355.0 | 1355.0 | 01-Apr-08 | 09-Apr-08 | S | EL394 |
| MGM *et al* ELLICE J-27 | 69.111 | -135.848 | EX | 2102.0 | 505.0 | 25-Dec-08 | 22-Jan-09 | S | EL427-A |
| ***Re-Entries of previously drilled wells*** | | | | | | | | | |
| Aurora/JOGMEC/NRCan MALLIK 2L-38 | 69.461 | -134.658 | DEV | 1320.0 | - | 08-Mar-08 | 19-Mar-08 | A | SDL060 |
| Aurora/JOGMEC/NRCan MALLIK 3L-38 | 69.461 | -134.662 | TEST | 1188.0 | - | 08-Mar-08 | 22-Mar-08 | A | SDL060 |
| Aurora/NRCan MALLIK 4L-38 | 69.461 | -134.660 | TEST | 1188.0 | - | 28-Mar-08 | 02-Apr-08 | A | SDL060 |
| Aurora/NRCan MALLIK 5L-38 | 69.461 | -134.661 | TEST | 1166.0 | - | 28-Mar-08 | 02-Apr-08 | A | SDL060 |
| MGM *et al* ATIK P-19 | 68.982 | -135.545 | EX | 1803.0 | - | 15-Feb-08 | 02-Mar-08 | A | EL427-B |

[1] Class EX=exploratory, DEL=delineation, DEV=development

[2] Status S=suspended, A=abandoned, PR=production

[3] Licence EL=Exploration Licence, SDL=Significant Discovery Licence, PL=Production Licence, SA=Sahtu Lands, PA=Normen Wells Proven Area

[4] Horizontal Well

[5] Drilling over year-end

## Table 7: Seismic Acquisition

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|
| 2D Seismic (in km) | 3,251 | 2,506 | 586 | 189 | 564 | 3,917 | 6,028 | 12,684 |
| 3D Seismic (in $km^2$) | 7,893 | 4,060 | 194 | 804 | 635 | 1,100 | 0 | 1,638 |

# DEVELOPMENT AND PRODUCTION

Only three fields produced oil or gas in the Northwest Territories in 2008: the Norman Wells oil field in the central Mackenzie Valley, the Ikhil gas field on the Mackenzie Delta and the Cameron Hills field southwest of Hay River in the southern Northwest Territories.

Imperial Oil's Norman Wells field in the central Mackenzie Valley is the northern anchor for the Enbridge Norman Wells oil pipeline which terminates in Zama, Alberta. This major oil field discovered in 1920 continues to produce oil from a Devonian age reef largely underlying the Mackenzie River The field had produced 39.9 x $10^6$ $m^3$ (250.9 million barrels) by year end at an average daily rate of 2,440 $m^3$ (15,400 barrels per day) over the course of the year. The field was fully developed in the early 1980s and has produced continuously since 1985, although there were earlier periods of limited production.

Gas from the Ikhil field on the Mackenzie Delta is produced from two wells and delivered through a 50 km pipeline to Inuvik where it is used for power generation and heating. To end of 2008, the field had produced a cumulative total of 142.2 x $10^6$ $m^3$ (5.02 billion cubic feet) of natural gas over 10 years of production.

The only field producing from the southern Northwest Territories in 2008 was Cameron Hills, operated by Paramount. Production from the four fields operated by this company in the Fort Liard area continues to be suspended. The Cameron Hills field produces both oil and gas which is delivered by pipeline south to the Bistcho area of northern Alberta. The field had produced 690.1 x $10^6$ $m^3$ (24.4 billion cubic feet) of natural gas and 298 x $10^3$ $m^3$ (1.9 million barrels) of oil to year end over a producing life to date of seven years.

No fields were producing from Nunavut or offshore Arctic waters.

Total natural gas production in the Northwest Territories in 2008 was 203 x $10^6$ $m^3$ (7.17 billion cubic feet), a 33% drop from the previous year. This reflects the loss of production from shut-in fields in the southern Northwest Territories. About one half of the gas total represents associated gas at Norman Wells which is used for field operations.

Total aggregate oil production in 2008 was 941.2 x $10^3$ $m^3$ (5.92 million barrels), 7.5% lower than 2007, reflecting the 7% decline in production from Norman Wells and lower production from Cameron Hills.

## Table 8: Oil and Gas Production

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| **Oil Production (thousand $m^3$)** | | | | | |
| Norman Wells (Imperial Oil) | 1186.7 | 1042.6 | 1012.4 | 964.3 | 893.6 |
| Cameron Hills (Paramount) | 48.6 | 47.2 | 70.3 | 53.3 | 47.8 |
| **Total** | **1235.3** | **1089.8** | **1082.7** | **1017.6** | **941.4** |
| **Gas Production (million $m^3$)** | | | | | |
| Norman Wells (Imperial Oil) | 103.7 | 102.4 | 109.3 | 103.7 | 103.8 |
| Pointed Mountain (Canadian Forest Oil) | – | – | – | – | –[2] |
| Ikhil (AltaGas) | 16.1 | 15.7 | 16.2 | 17.9 | 18.9 |
| Fort Liard ("F-36" - Paramount) | 11.2 | 50.7 | 29.9 | 52.6 | 0[1] |
| Fort Liard ("K-29" - Paramount) | 465.4 | 203.3 | 59.1 | 49.1 | 0[1] |
| Fort Liard ("P-66A" - CNRL) | – | – | – | – | –[2] |
| Southeast Fort Liard ("N-01" - Paramount) | 48.1 | 38.8 | 11.9 | 0 | 0[1] |
| Cameron Hills (Paramount) | 92.8 | 91.3 | 93.5 | 99.0 | 80.3 |
| **Total** | **737.3** | **502.2** | **319.9** | **322.3** | **203.0** |

[1] Production Suspended

[2] Abandoned

**Figure 2: Oil Production**

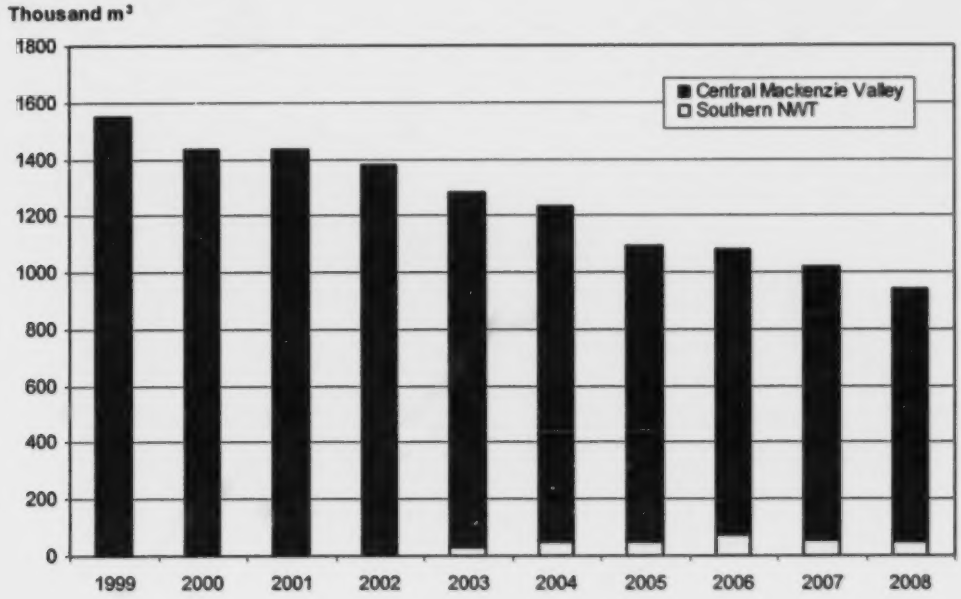
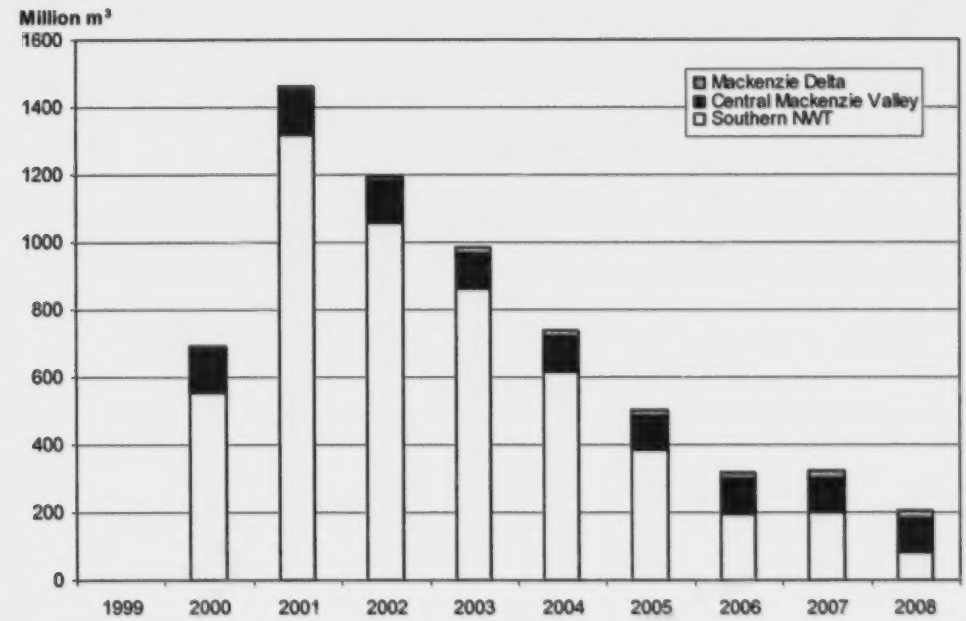



**Figure 3: Gas Production**



# ROYALTIES

Royalties received in the calendar year 2008 from oil and gas production on northern frontier lands amounted to $30,381,061. The slight increase from 2007 is despite decreased production and is due to high prices during the early part of the year.

**Table 9: Royalties ($)**

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| Royalty | 24,509,774 | 20,560,265 | 16,051,861 | 30,477,442 | 25,078,071 | 30,381,061 |

## Audits and Assessments

Three audits of royalty returns of producing companies were underway during 2008. All are scheduled to be complete by March 31, 2009.

## Royalty Administration

The development of a new web-Based Royalty Management System is substantially complete and undergoing tests. The new Royalty Management System will allow interest holders in production licences to submit required forms electronically.

## Regulatory Review

A project to modernize the *Frontier Lands Petroleum Royalty Regulations* was successfully completed with the coming into effect April 4, 2008 of amended regulations which better meet today's operating environment, strengthen royalty accountability and assurance, and improve the administrative efficiency of the royalty regime.

# FURTHER INFORMATION

## Northern Oil and Gas Branch

Please check our website first at www.ainc-inac.gc.ca/nth/og/

To obtain further information, please contact appropriate individuals below by phone or in writing.

**Mailing address:**
Northern Oil and Gas Branch
Department of Indian and Northern Affairs
10th Floor, 15/25 Eddy Street
OTTAWA, ON K1A 0H4

**Courier only:**
Northern Oil and Gas Branch
Department of Indian and Northern Affairs
15/25 Eddy Street
GATINEAU, QC K1A 0H4
Telephone: (819) 997-0877
Fax: (819) 953-5828

Information on the resource management regime, calls for nominations and bids, and other related information: Manager, Land Tenure – Telephone: (819) 934-9392

Information on registration procedures and regulations, exploration, significant discovery and production licences, transfers, and notices: Registrar – Telephone: (819) 997-0048

Information on Northern Oil and Gas Maps, and Geographic Information System (GIS) Data: Geomatics Officer – Telephone: (819) 953-8988.

Information on northern exploration history and geological / geophysical activities: Senior Petroleum Geologist – Telephone: (819) 953-8722

Information on royalty policy and royalty submissions: Manager, Fiscal Policy and Royalty Administration – Telephone: (819) 997-0877

Information on Benefits Plan requirements for Nunavut and northern offshore is available from the Northern Oil and Gas Branch – Telephone (819) 953-2087.

Information on Benefits Plan requirements associated with new exploration programs on land in the Northwest Territories is available from the department's Northwest Territories Regional Office at:

Petroleum Development and Benefits Division
Northwest Territories Regional Office
Department of Indian and Northern Affairs
4914-50th Street, P.O. Box 1500
YELLOWKNIFE, NT X1A 2R3
Telephone: (867) 669-2618 / Fax: (867) 669-2409

## Other Sources of Information

**National Energy Board**

- The Operations Business Unit regulates the exploration, development and production of hydrocarbon resources in non-Accord frontier lands under the *Canada Petroleum Resources Act*, the *Canada Oil and Gas Operations Act*, and the *National Energy Board Act*.
- The Frontier Information Office provides access to maps, technical information, geological and geophysical reports, well history reports and records.

National Energy Board (NEB)
444 Seventh Avenue SW
CALGARY, AB T2P 0X8
Telephone: (403) 292-4800
Website: http://www.neb.gc.ca/

**Geological Survey of Canada**

The Geological Survey of Canada Calgary provides public viewing and sampling facilities for cores and samples, and information on wells drilled north of 60 at its offices at:

Geological Survey of Canada Calgary
3303-33rd Street NW
CALGARY, AB T2L 2A7
Telephone: (403) 292-7000
Website: http://gsc.nrcan.gc.ca/org/calgary/

Information on geoscience in the Baffin Bay – Davis Strait region is available from:

Geological Survey of Canada Atlantic
Bedford Institute of Oceanography
P.O. Box 1006
DARTMOUTH, NS B2Y 4A2
Website: http://gsc.nrcan.gc.ca/org/atlantic/

# FURTHER INFORMATION

## Northern Oil and Gas Branch

Please check our website first at www.ainc-inac.gc.ca/nth/og/

To obtain further information, please contact appropriate individuals below by phone or in writing.

**Mailing address:**
Northern Oil and Gas Branch
Department of Indian and Northern Affairs
10th Floor, 15/25 Eddy Street
OTTAWA, ON K1A 0H4

**Courier only:**
Northern Oil and Gas Branch
Department of Indian and Northern Affairs
15/25 Eddy Street
GATINEAU, QC K1A 0H4
Telephone: (819) 997-0877
Fax: (819) 953-5828

Information on the resource management regime, calls for nominations and bids, and other related information: Manager, Land Tenure – Telephone: (819) 934-9392

Information on registration procedures and regulations, exploration, significant discovery and production licences, transfers, and notices: Registrar – Telephone: (819) 997-0048

Information on Northern Oil and Gas Maps, and Geographic Information System (GIS) Data: Geomatics Officer – Telephone: (819) 953-8988.

Information on northern exploration history and geological / geophysical activities: Senior Petroleum Geologist – Telephone: (819) 953-8722

Information on royalty policy and royalty submissions: Manager, Fiscal Policy and Royalty Administration – Telephone: (819) 997-0877

Information on Benefits Plan requirements for Nunavut and northern offshore is available from the Northern Oil and Gas Branch – Telephone (819) 953-2087.

Information on Benefits Plan requirements associated with new exploration programs on land in the Northwest Territories is available from the department's Northwest Territories Regional Office at:

Petroleum Development and Benefits Division
Northwest Territories Regional Office
Department of Indian and Northern Affairs
4914-50th Street, P.O. Box 1500
YELLOWKNIFE, NT X1A 2R3
Telephone: (867) 669-2618 / Fax: (867) 669-2409

## Other Sources of Information

**National Energy Board**

- The Operations Business Unit regulates the exploration, development and production of hydrocarbon resources in non-Accord frontier lands under the *Canada Petroleum Resources Act*, the *Canada Oil and Gas Operations Act*, and the *National Energy Board Act*.
- The Frontier Information Office provides access to maps, technical information, geological and geophysical reports, well history reports and records.

National Energy Board (NEB)
444 Seventh Avenue SW
CALGARY, AB T2P 0X8
Telephone: (403) 292-4800
Website: http://www.neb.gc.ca/

**Geological Survey of Canada**

The Geological Survey of Canada Calgary provides public viewing and sampling facilities for cores and samples, and information on wells drilled north of 60 at its offices at:

Geological Survey of Canada Calgary
3303-33rd Street NW
CALGARY, AB T2L 2A7
Telephone: (403) 292-7000
Website: http://gsc.nrcan.gc.ca/org/calgary/

Information on geoscience in the Baffin Bay – Davis Strait region is available from:

Geological Survey of Canada Atlantic
Bedford Institute of Oceanography
P.O. Box 1006
DARTMOUTH, NS B2Y 4A2
Website: http://gsc.nrcan.gc.ca/org/atlantic/